General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

1. Given the distance between Verona and Milan is 158 km and the time taken is 1 hours and 40 mins, then the average speed is :

$$\text{40 mins in hours is } \frac{40}{60} = \frac{2}{3}$$

$$\text{average speed is } = \frac{158}{1\frac{2}{3}} = 98.8\text{km/hr}$$

2. Given Alice gets a basic rate of pay of £6.50, her overtime rate is time and a half and she got paid £136.50 last week which included 4 hours overtime. To calculate how much time she worked at normal rate we have:

$$\text{Overtime rate} = 1.5 \times 6.50 = £9.75$$

$$\text{Overtime pay} = 9.75 \times 4 = £39$$

$$\text{Basic pay} = £136.50 - £39 = £97.50$$

$$\text{Hours worked } £97.50 \div £6.50 = 15 \text{ hours}$$

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

3 Completing the table and finding the mean we have:

Number of letters	Frequency	Number of letter x frequency
1	5	1 x 5 = 5
2	12	2 x 12 = 24
3	18	3 x 18 = 54
4	26	4 x 26 = 104
5	18	5 x 18 = 90
6	11	6 x 11 = 66
7	7	7 x 7 = 49
8	3	8 x 3 = 24
Totals	100	396

$$\text{Mean} = \frac{396}{100} = 4.16$$

$$= 4.2 \text{ (to 1 decimal place)}$$

4. Given Book prices and Dyna must spend between £15 - £20 and does not buy more than one copy of any one book. All possible combinations are:

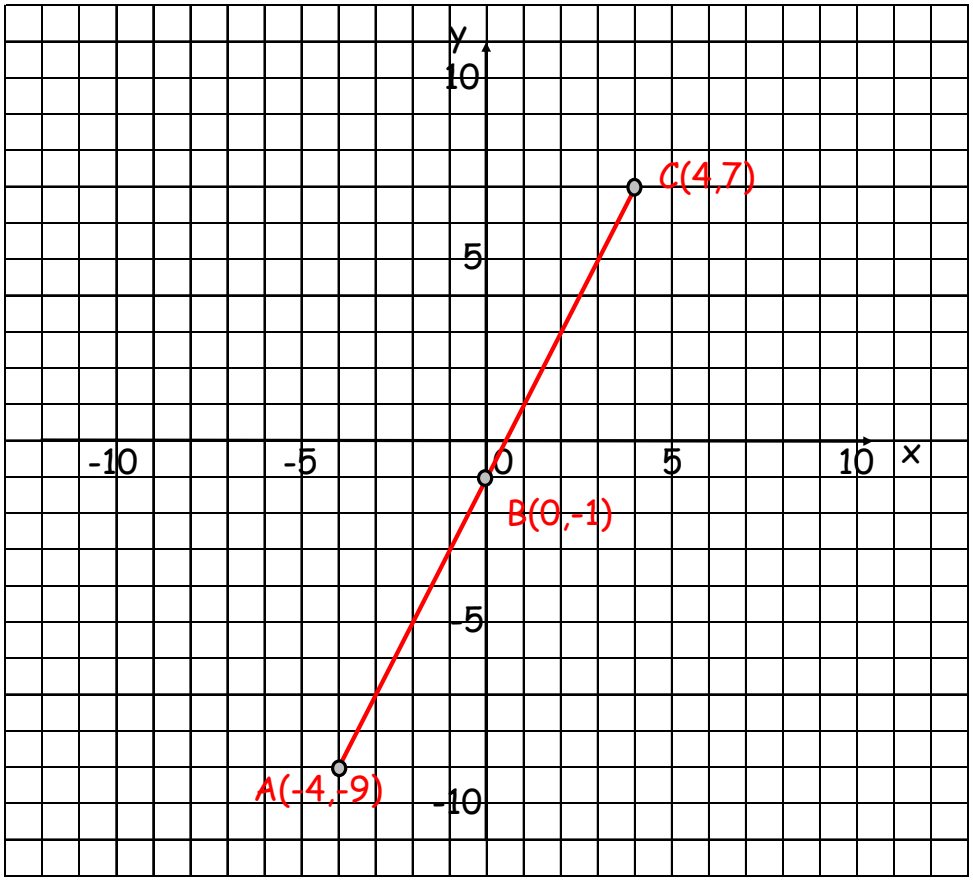
Book Title	Book Title	Book Title	Total Cost £
Pasta	Chicken		19.98
Pasta	Soups	Puddings	19.97
Chicken	Puddings		15.98
Chicken	Soups		16.98
Fish	Puddings		16.98
Fish	Soups		17.98

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

5. Completing the table and drawing the line $y = 2x - 1$ we get.

x	-4	0	4
y	-9	-1	7

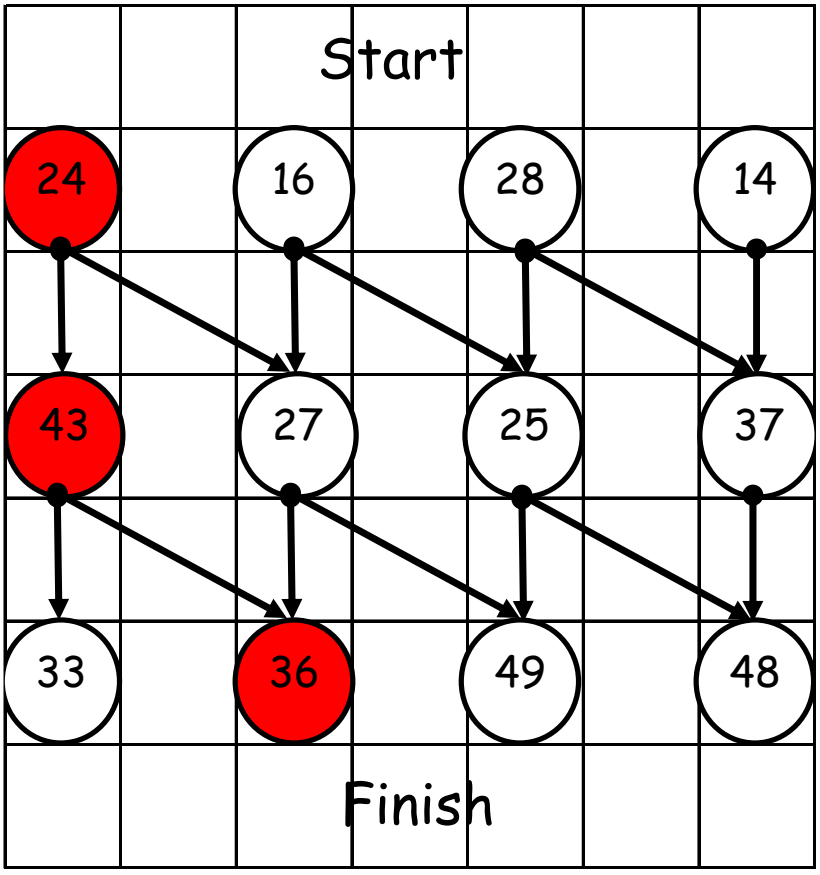


General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

6. Following the instructions:

- Start with a multiple of 4
- Move to a prime number
- Finish with a square number

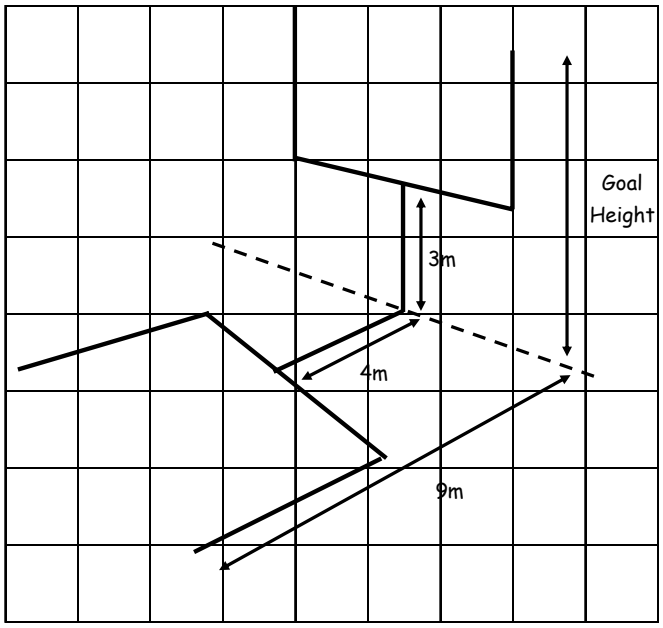


First Number is 24 Second number is 43 Third number 36

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

7. Given the diagram and measurements, the total goal height is:



Real : Shadow Scale

3 : 4

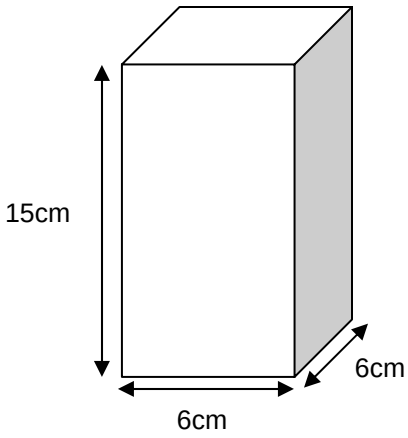
Real goal height is :

$\frac{3}{4}$ of $9 = 9 \div 4 \times 3 = 6.75\text{m}$

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

8. Given the diagram and that the candle is a cuboid.
From a tub of 10 litre of wax we can make:



1 candle has volume:

$$\text{Volume} = l \times b \times h$$
$$= 6 \times 6 \times 15$$
$$= 540\text{cm}^3$$

$$10 \text{ litres} = 10\,000\text{cm}^3$$

So for $10\,000\text{cm}^3$ we can get:

$$\frac{10\,000}{540} = 18.5$$ 18 candles.

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

9. (a) Multiplying out the brackets and collecting terms we get:

$$3(2w+1)+2(8-w)$$
$$6w+3+16-2w$$
$$4w+19$$

(b) Solving the inequality we get:

(Remember change side change sign)

$$3x-4\leq 11$$
$$3x\leq 11+4$$
$$3x\leq 15$$
$$x\leq \frac{15}{3}$$
$$x\leq 5$$

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

10. Given the cost c pounds of carpet varies directly as it length l m.
A carpet of length 5m costs £340:

(a) A carpet of length 8m will cost:

$$c = k \times l$$
$$340 = k \times 5$$
$$k = \frac{340}{5} = 68$$

Formula is: $c = 68 \times l$

For 8m we have $c = 68 \times 8 = £544$

(b) The length of the carpet that cost £238 will be:
He will be able to paint his desk:

$$c = 68 \times l$$
$$238 = 68 \times l$$
$$l = \frac{238}{68} = 3.5m$$

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

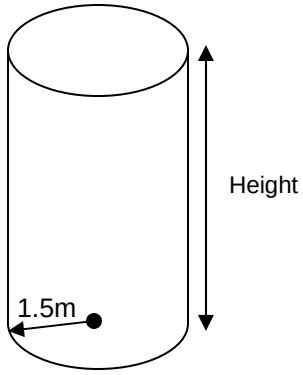
11. Given the climbing frame is cylindrical in shape, the surface area is $75.5m^2$ and the radius 1.5m.

To find the height we have:

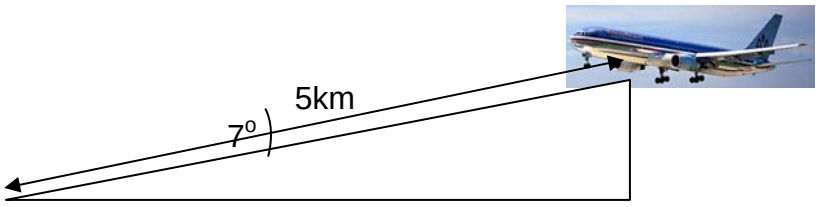
$$A = 2\pi \times r \times h$$

$$75.5 = 2\pi \times 1.5 \times h$$

$$h = \frac{75.5}{3\pi} = 8.01m$$



12. Given the diagram of the aircraft landing at Glasgow Airport we can calculate the height of the aircraft by:



By (S°H)(C^AH)(T°A)

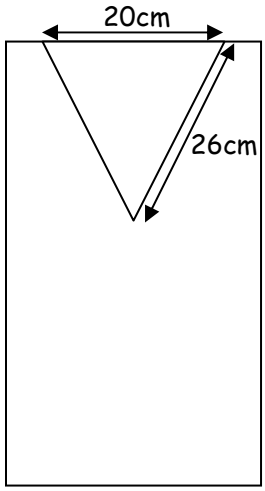
$$\sin(7°) = \frac{x}{5}$$

$$x = 5\sin(7°) = 0.6093km = 609m$$

General Paper 2 Exam Solutions 2003

Created by
Graduate Bsc (Hons) MathsSci (Open) GIMA

12. Given the diagram of the isosceles triangular banner hanging from a building and knowing the dimensions. We can calculate the area of the banner by:



$\text{Area} = \frac{1}{2}bh$ h = vertical height

By Pythagoras

$h^2 = \sqrt{(26^2 - 10^2)}$

$= \sqrt{576}$

$= 24\text{m}$

$\text{Area} = \frac{1}{2} \times 10 \times 24$

$= 120\text{m}^2$